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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/068,449	02/07/2002	Lukas Novotny	176/60921 (2-11150-912)	9533

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EXAMINER

STAHL, MICHAEL J

ART UNIT PAPER NUMBER

2874

DATE MAILED: 06/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/068,449	NOVOTNY ET AL.	
	Examiner	Art Unit	
	Mike Stahl	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-59 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-13,22-26,31-35 and 40-53 is/are allowed.
- 6) ☒ Claim(s) 1-8,14-21,27-29,36-38 and 54-57 is/are rejected.
- 7) ☒ Claim(s) 30,39,58 and 59 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5, 7-8, 14-18, and 20-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Ueyanagi (US 2001/0009541).

Claim 1: Ueyanagi discloses a system (figs. 1 or 6) comprising: an optical element 6; at least one structure 8 at least partially in a non-opaque portion of the optical element and at least adjacent a surface of the optical element; and a source 2 of light with a mode profile that provides an electric field which has a vector component substantially perpendicular to the surface of the optical element, the source positioned to propagate at least a portion of the light through the optical element onto an object 12, the structure 8 enhancing the electric field of the light which optically interacts with the object. See e.g. [0042], [0044], [0055], and [0059]-[0063]. Note that in the embodiment of fig. 1F, the structure 8 has at least one pointed tip (i.e. any of the four roughly 60 degree angles encompassing the shaded areas).

Claim 2: The system includes a guiding system for moving the optical element (which is part of an optical head 1) as shown in fig. 15.

Claim 3: The system includes a focusing lens 5 positioned to focus the light from the source onto the optical element.

Claim 4: The optical element 6 is a solid immersion lens (SIL) as noted in [0044].

Claim 5: The optical element 6 may be regarded as an optical waveguide in that it has a refractive index higher than that of the surrounding medium, and in that it guides the beam from the source 2 toward the structure 8.

Claim 7: The structure 8 protrudes out past the surface of the optical element 6 by approximately 40 nm, given that the depth of the etched groove 6f in fig. 2B is 10 nm and the thickness of the Ti film 71 deposited over it in fig. 2C is 50 nm. See [0064].

Claim 8: The structure 8 may be coated with an antireflection film ([0072]).

Claims 14-18, 20-21: These claims are satisfied by the process of producing the Ueyanagi system described above with regard to claims 1-8.

Claims 1-3, 5-7, 14-16, 18-20, 27-29, 36-38, and 54-57 are rejected under 35 U.S.C. 102(b) as being anticipated by Keilmann (US 4994818).

Claim 1: Keilmann discloses a system (fig. 3) comprising: an optical element 10; at least one structure 20 at least partially in a non-opaque portion 22 of the optical element and at least adjacent a surface of the optical element, wherein the structure has at least one pointed tip; and a source of light 16 with a mode profile that provides an electric field which has a vector component substantially perpendicular to the surface of the optical element, the source positioned to propagate at least a portion of the light through the optical element onto an object, the structure 20 enhancing the electric field of the light which optically interacts with the object.

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The non-opaque portion includes a material (polyethylene in the reference example) which insulates the structure **20** and which is transparent at the wavelength of light **16**. See e.g. col. 3 ln. 29 – col. 4 ln. 2.

Claim 2: Insofar as the Keilmann device is directed to a tip for a scanning microscope, it is considered inherent that the system includes a guiding system for moving the optical element with the structure and/or the object.

Claim 3: The system may include a focusing lens positioned to focus the light from the source onto the optical element (col. 4 lns. 8-9).

Claim 5: The optical element is an optical waveguide.

Claim 6: The structure **20** is elongated and extends in a direction which is substantially perpendicular to the surface of the optical element.

Claim 7: The structure **20** protrudes out past the surface of the optical element.

Claims 14-16 and 18-20: These claims are satisfied by the process of producing the Keilmann system described above with regard to claims 1-3 and 5-7.

Claims 27-29, 36-38, 54-57: The Keilmann system described above is interpreted as a lens at least in the sense that it focuses light. The structure **20** is elongated and one end of it has a tapered section that begins to taper at a location spaced in from the surface of the optical element and converges to one tapered end tip adjacent the surface of the optical element. See e.g. col. 3 lns. 61-67. The structure extends in a direction substantially perpendicular to the surface of the optical element.

Response to Amendment (March 22, 2006)

The rejection of claims 27 and 36 and their respective dependent claims under Ueyanagi has been withdrawn in view of the amendment (the structure 8 does not satisfy the added conditions). New claims 54-57 are considered distinct over Ueyanagi for the same reason. However, claims 27 and 36 and some of their dependent claims are still rejected under Keilmann because that reference plainly shows the recited tapered structure in fig. 3. The remarks (p. 16) refer to fig. 2 in Keilmann, but it is noted that fig. 3 was relied on for the rejection in both the last Office action and the current one.

The remarks (p. 12/14) assert that Ueyanagi and Keilmann do not disclose a light source with a mode profile that provides an electric field which has a vector component substantially perpendicular to the surface of the optical element. However, the Office action's interpretation is that light normally contains an electric field vector component which is perpendicular to its propagation vector, so that a light beam such as 2b in Ueyanagi or 16 in Keilmann has an electric field vector component which is perpendicular to the direction of the beam. In both references, the optical element 6 (Ueyanagi) or 10 (Keilmann) has a surface which is perpendicular to the electric field vector (and parallel to the beam). The surface of the optical element in each reference is being regarded as a continuous surface, i.e., the entire outer surface of 6 in Ueyanagi or 10 in Keilmann.

Allowable Subject Matter

Claims 9-13, 22-26, 31-35, 40-44, and 51 remain allowed as set forth in the last Office action (mailed September 20, 2005). Claim 47 is presently allowed since it was amended to

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overcome an objection set forth in that action. Claims 45-46, 48-50, and 52-53 are presently allowed since independent claims 45 and 49 were amended to recite that the structure reflects a portion of the light onto the elliptical shaped mirror. This arrangement is not disclosed or suggested by the previously applied Shafer reference.

Claims 30, 39, and 58-59 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Keilmann is the only reference still applied to base claims 27 and 36, but it provides no teaching or suggestion to include a coating over at least a protruding portion of the structure **20** as required by claims 30 and 39, and does not disclose or suggest that the optical element **10** is a solid immersion lens as required to claims 58-59.

Conclusion

Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Inquiries about this letter should be directed to Mike Stahl at 571-272-2360. Inquiries of a general or clerical nature (e.g., a request for a missing form or paper, etc.) should be directed to the technical support staff supervisor at 571-272-1626. Official correspondence which is eligible for submission by facsimile and which pertains to this application may be faxed to 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Questions about the Private PAIR system should be directed to the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mike Stahl ^{MJS}
Patent Examiner
Art Unit 2874

May 24, 2006


SUNG PAK
PRIMARY EXAMINER